



VALMONT GENERATING STATION

Ash Recycling/Beneficiation Process – Charah Solutions and Geocycle

May 23, 2023 Public Meeting/Open House



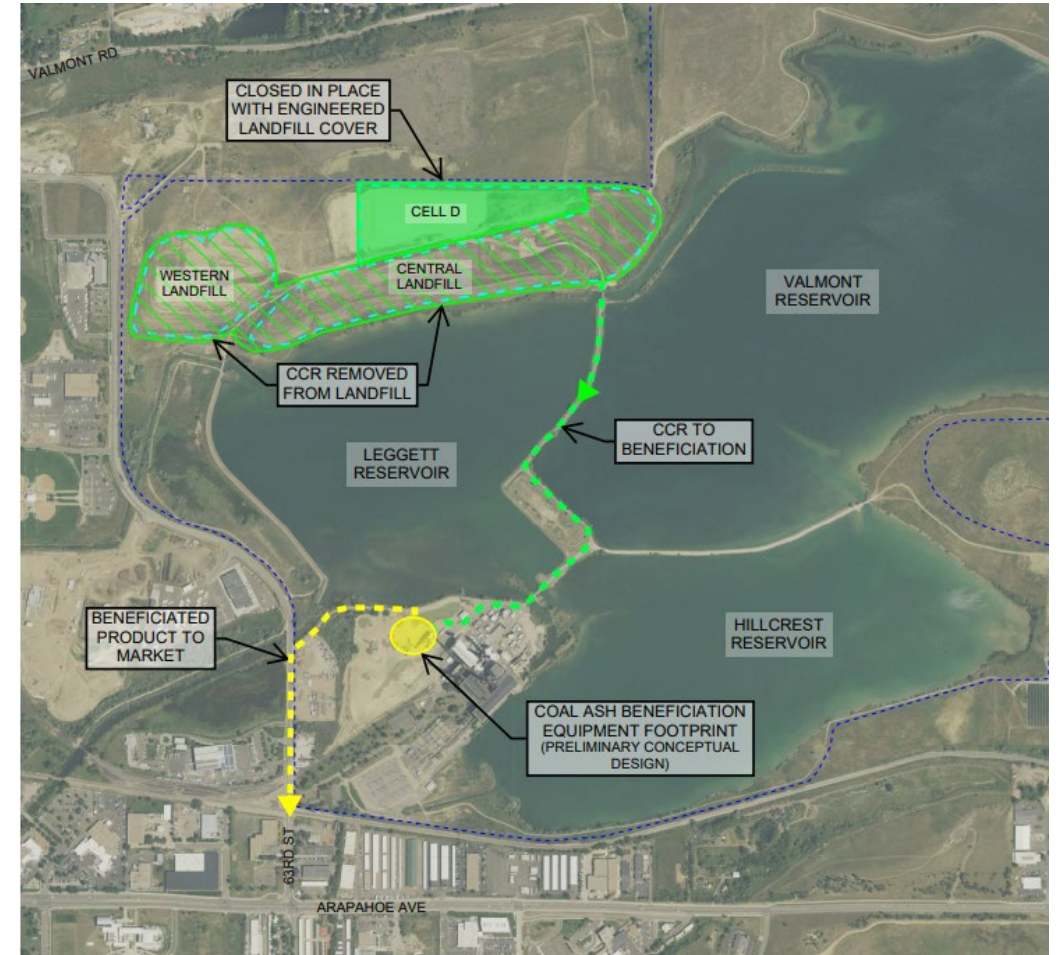
ASH RECYCLING/BENEFICIATION OVERVIEW

- Excavate historic ash from landfill in stages, screen and blend
- Dispose of screened reject materials in landfill Cell D and cap
- Reclaim areas after ash is removed to state-approved specifications
- Transport ash to recycling equipment for processing
- ASTM specification product is produced for concrete applications
 - American Society for Testing and Materials, quality control standards
- All processing, storage, and offsite transport in enclosed equipment
- Contract signed with Charah Solutions and Geocycle

Ash Removal, Recycling, and Material Flow

Charah to operate landfill and Geocycle to operate recycling equipment

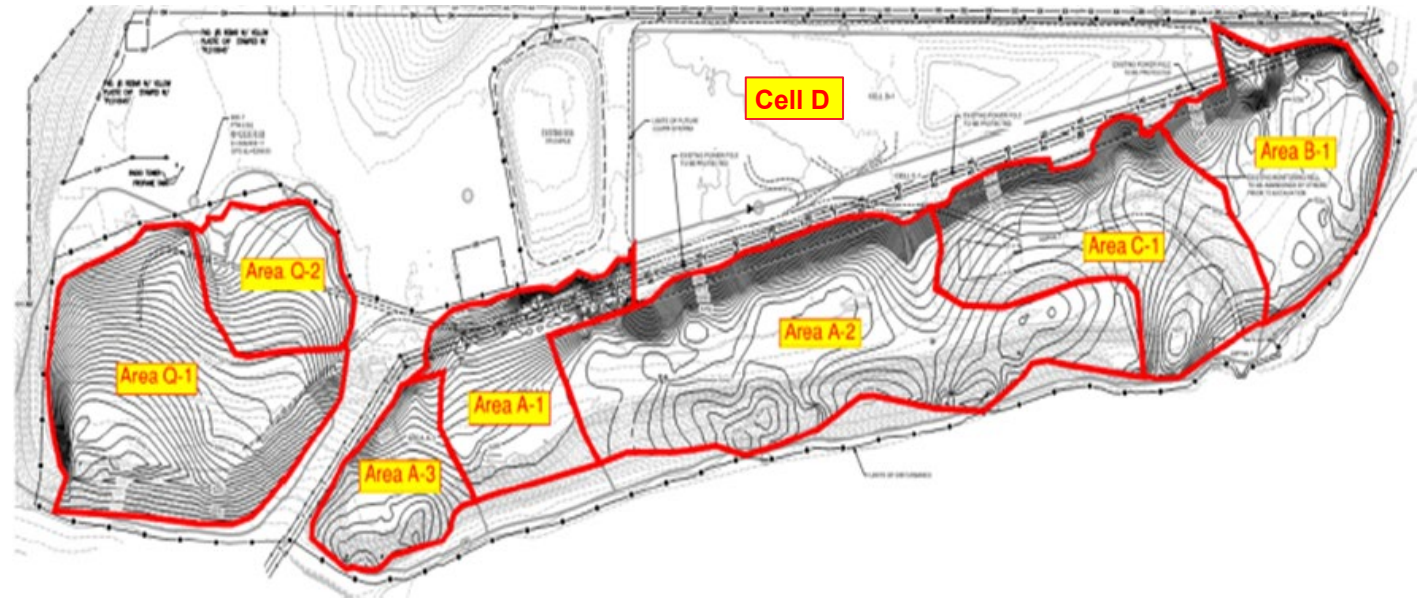
- Remove 1.8 million tons of ash from landfill
 - Combined with 200,000 tons from Cherokee
 - Storm water, erosion, and dust control plans
 - Reclaim and revegetate areas after ash is removed
- Process 2 million tons over 10-12 years
 - Operate 5-7 days per week, 50 weeks per year
 - Fully-enclosed process equipment
 - Process air emission controls and permit
 - Reservoirs used for equipment cooling water
- Traffic Controls
 - Trucks from landfill wetted for fugitive dust
 - Trucks offsite are fully-enclosed trailers



Landfill Removal, Reject Disposal, and Reclamation

Engineering Design and Operations Plan (EDOP) for excavation

- Fugitive Dust, Stormwater, Safety
- West and east cells are blended to meet initial specification for processing
 - Prioritizes areas of greatest groundwater impact (see Station 3, groundwater info)
- Reject materials are landfilled in Cell D for final closure at end of project
- Removed areas are reclaimed per EDOP approved by State and Local agencies



West Landfill Cells | East Landfill Cells

Ash Recycling/Beneficiation Equipment Location at Valmont

Adjacent to existing plant buildings and equipment

- Former coal pile area
 - Process equipment and truck queuing area to be loaded
- Utilize existing baghouse
 - Integrated for process cooling
 - Process air emissions controls
 - Finished product storage
- Utilize existing storage silo
 - Finished product storage/loadout
- No more intensive use of site and equipment than historically at coal plant



Note: Equipment enlarged to show detail, not to scale (conceptual layout).

Ash Beneficiation Equipment Location at Valmont

Street view from 63rd Street showing maximum heights of equipment



Ash Recycling/Beneficiation Equipment – Concrete Uses

Meeting ASTM specs for cement – DOT specs for transportation infrastructure

- Rotary Drum Drying
 - Removes excess water and mixes
- Thermal Carbon Removal
 - Removes unburnt carbon and organics
- Size Reduction
 - To meet ASTM/quality control specifications



Raw Pounded Ash



Dryer



Size Reduction



Classification



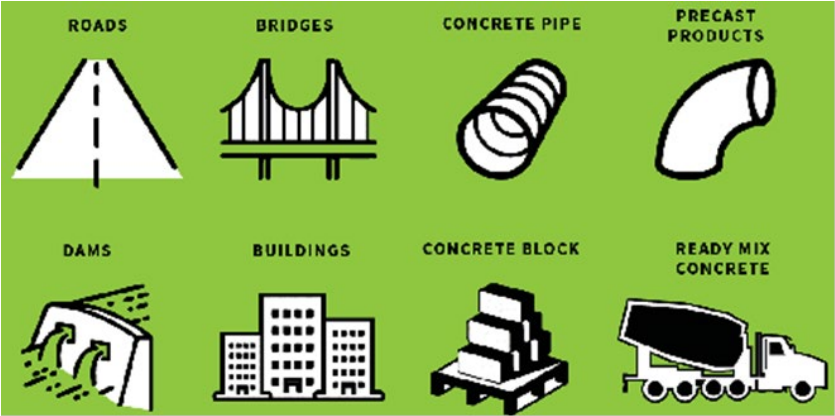
Final Product

Beneficiated Ash Sold in Local Concrete Market

Finished product shipped directly to users as Portland cement substitute



ECOPact – Low Carbon Concrete



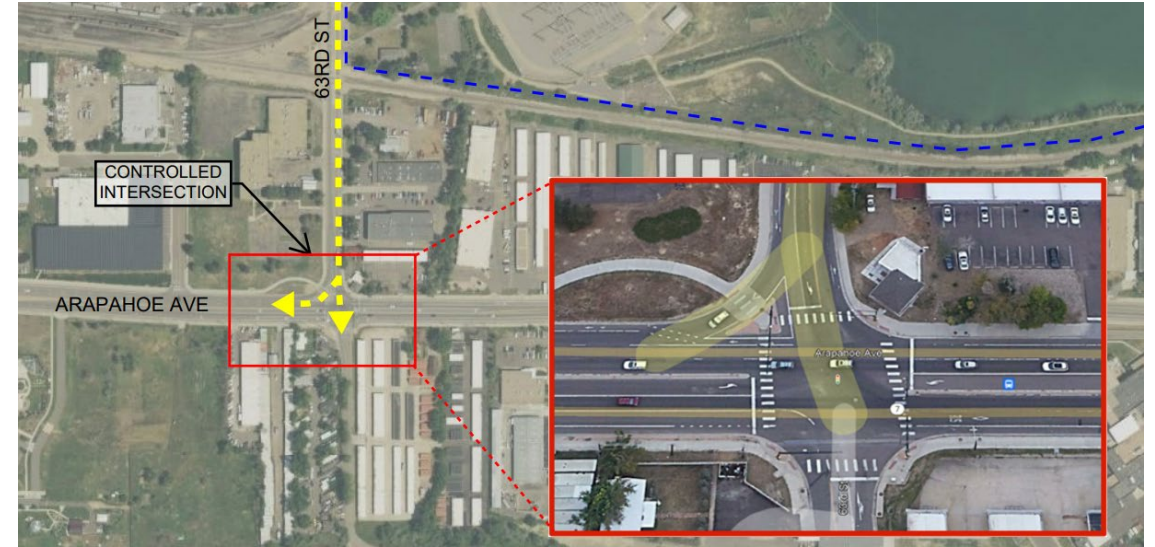
Ash Beneficiation - Community Interests and Benefits

Traffic

- Similar to when Valmont was operating on coal
 - 24 round trips per day, mostly off-peak commuting hours
 - On-site temporary parking before loading
 - Fully-enclosed pneumatic (air enclosed) trailers
 - Movement-controlled intersection at Arapahoe and 63rd

Noise

- Aeroacoustic mill is enclosed in noise suppressing container
- Other equipment has even lower noise levels

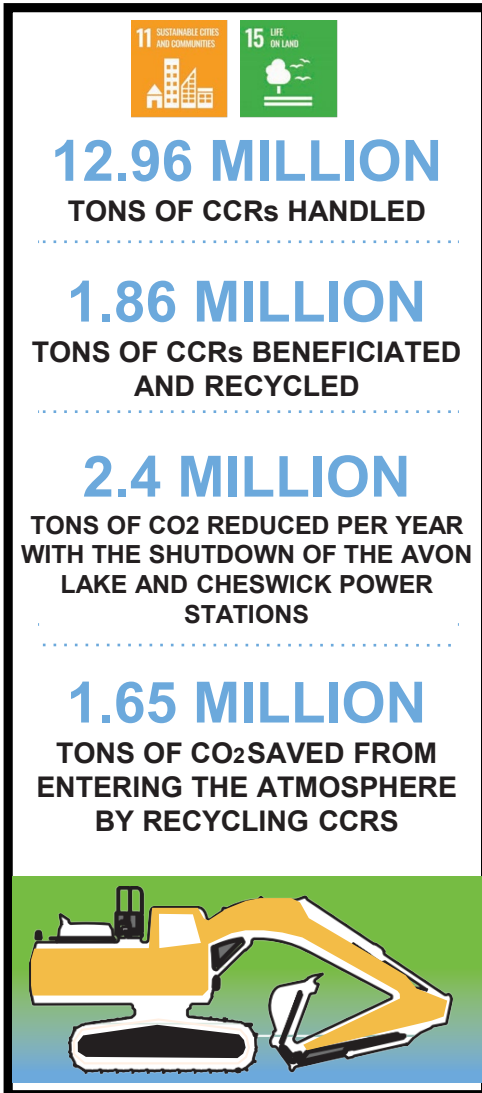


<p>~60 ACRES OF LAND RECLAIMED Majority of Valmont Landfill Closed by Removal</p>	<p>2.0 MILLION TONS OF CCRs* BENEFICIATED 1.8 Millions Tons removed from the Valmont Landfill with 200,000 Tons removed from the Cherokee Station.</p>	<p>1.63 MILLION TONS OF CO₂ SAVED Through CCR Use in Concrete Production</p>	<p>30-35 JOBS FOR THE LOCAL COMMUNITY</p>
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*CCR – Coal Combustion Residuals or coal ash

Environmental, Social and Governance - ESG

2022 ESG AT A GLANCE FOR CHARAH





11 SUSTAINABLE CITIES AND COMMUNITIES 15 LIFE ON LAND

12.96 MILLION
TONS OF CCRs HANDLED

1.86 MILLION
TONS OF CCRs BENEFICIATED AND RECYCLED

2.4 MILLION
TONS OF CO₂ REDUCED PER YEAR WITH THE SHUTDOWN OF THE AVON LAKE AND CHESWICK POWER STATIONS

1.65 MILLION
TONS OF CO₂ SAVED FROM ENTERING THE ATMOSPHERE BY RECYCLING CCRs

2.79 MILLION
TONS OF MATERIALS DIVERTED FROM LANDFILL DISPOSAL in 2022

14 PONDS CLEANED AND CLOSED AND 1 MINE RECLAIMED
SINCE EPA 2015 CCR RULE TOOK EFFECT

APPROXIMATELY 4,368 ACRES
OF LAND RECLAIMED SINCE EPA 2015 CCR RULE TOOK EFFECT

243 MILLION
GALLONS OF WASTEWATER TREATED in 2022

0.55 TOTAL RECORDABLE INCIDENT RATE
(INDUSTRY AVERAGE IS 3.1)

A THREE-YEAR AVERAGE EXPERIENCE MODIFICATION RATE (EMR) OF

LESS THAN 0.62
ZERO LOST TIME

12,507 SAFETY INSPECTIONS
PERFORMED; 795,723 SAFETY OBSERVATIONS PERFORMED; 250 COMPLIANCE AUDITS; 478 FINDINGS

ZERO INCIDENTS
OF NON-COMPLIANCE ASSOCIATED WITH AIR EMISSIONS AND OF NON-COMPLIANCE WITH OTHER ENVIRONMENTAL DISCIPLINES



ESG AT A GLANCE FOR GEOCYCLE

459K METRIC TONS CO₂ SAVED
WITH LOW CARBON PRODUCTS IN 2022

1 MILLION TONS
OF CCR BENEFICIAL REUSE ANNUALLY

\$1 BILLION
INVESTED IN PLANT MODERNIZATION PROJECTS IN PAST DECADE

50 MILLION TONS
OF WASTE RECYCLED ANNUALLY TO RECOVER ENERGY AND DEVELOP SUSTAINABLE SOLUTIONS



*CO₂ savings are generated for lifecycle GHG calculations using the EPA WARM Model: MTCO₂e = Metric Tonnes of CO₂e Greenhouse Gas (GHG); EPA WARM Model evaluates total lifecycle of GHG rather than site-specific GHG calculations. Lifecycle GHG values are typically greater than those of site-specific activities; The EPA WARM model was run using default settings.